

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Whitley

Examiner: Ngo, Lien M.

Application No.: 10/667,007

Group Art Unit: 3727

Filed: September 19, 2003

Docket: P5655/3 (102-490)

For: ROLLER BOTTLE CAP

Dated: June 24, 2005

Confirmation No.: 9127

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postpaid in an envelope, addressed to: Commissioner for Patents, Alexandria, VA 22313

Dated: June 24, 2005

Signature Barbara Thomas 

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF PRIOR INVENTION UNDER §1.131

1. This Declaration is to establish conception of the invention in the United States at a date prior to August 12, 2002, the earliest effective filing date of U.S. Patent Application Publication No. 2004/0108294 A1 to Bloom, et al. (hereinafter "Bloom"), which was cited by the Examiner in a non-final Office action mailed January 12, 2005.
2. I, Kenneth W. Whitley, inventor to the above-referenced application, am making this declaration.
3. To establish conception prior to August 12, 2002, the following document is being submitted as evidence:

Prior to August 12, 2002, I prepared and submitted an invention disclosure record (IDR), a copy of which is attached hereto as Exhibit A. This invention disclosure is the basis for the

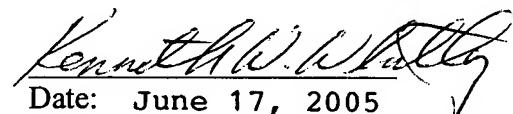
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present application. The invention disclosure shows conception of my invention at a date prior to August 12, 2002.

4. On September 20, 2002, a provisional application was filed in the U.S. Patent and Trademark Office and assigned U.S. Provisional Application No. 60/412,356. From the time of my conception of the invention prior to August 12, 2002 until this provisional application was filed, I worked diligently and continuously on my invention.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Sole Inventor: Kenneth W. Whitley
Inventor's signature:



Date: June 17, 2005
Citizenship: U.S.
Residence: 9515 Meadowmont Lane
Raleigh, NC 27615

Post Office Address: Same as above

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**BECTON DICKINSON AND COMPANY
INVENTION DISCLOSURE RECORD**

102-490P

To: Chief Patent and Licensing Counsel Becton, Dickinson and Company 1 Becton Drive Franklin Lakes, NJ 07417	Date Received: Patent Dept. File No.: P-5655/3 Attorney/Agent Assigned: NST
Originating Division: BD Biosciences, Discovery Labware Relates to: (select one WWBusiness from pull-down list below) Tissue Culture (TC) / Labware Div.	Date Submitted: Presumptive Inventors: Ken Whitley
Title: Roller Bottle Cap	
1. Date of Completion of the Inventive Concept:	5. Date of First..... Publication or Expected Publication: Not published. Nature of Publication: N/A Sale or Expected Sale: In What Countries? N/A Showing to Others Outside BD Will show to TKT Company, Boston, MA on
2. Date and Location of Earliest Written Description: - Personal Record Notebook	
3. Date of First Experimental Demonstration of the Invention: Done by: Witnesses: Larry Monahan, BD	
4. Date First Shown or Described to Others at BD:	6. Related Agreements, Licenses or Contracts: None

7. DETAILED DESCRIPTION OF THE INVENTION: Describe in detail *what the invention is, how it works* and what *advantages/improvements* it provides as compared to similar compositions, methods or machines and *what prior art problems are solved* by the invention. In addition to describing what you believe to be *the best embodiment* and (*if one exists*) *the commercial embodiment*, include a description of *all operative variations and alternatives* in reaction components, concentrations, methods of use, methods of manufacture, mechanical parts, etc. If possible, describe the *underlying technical principle* which produces the advantageous result. Include similar descriptions for any *related aspects of the invention* which are necessary to make and use it (e.g., methods of making and using a novel compound or composition, methods of using a novel machine). Consider and indicate which of these *related aspects may also be patentable* (e.g., if a chemical process, are the reactants or products also novel? If a new chemical composition, are the methods of making it and/or the methods of using it also novel? If a novel machine, is the product it produces also novel in some way?) For the invention and its various related aspects, describe any *unexpected results* which were observed. Include or attach *drawings*, if appropriate, or if they are helpful for understanding the invention (e.g., chemical structure, flow charts, engineering drawings, schematics). All such *additional pages should be separately witnessed and dated*. Copies of *laboratory notebooks are not necessary at this time*, but may be cited and should be readily available for future reference.

A. What the Invention Is and How It Works

The invention consists of a round, threaded roller bottle cap consisting of two pieces. The first piece is a threaded cap with a large hole through the center of its top surface. A second piece containing the actual sealing mechanism is snapped into this hole such that it is free to rotate about the axis of the cap. This sealing mechanism is identical to the sealing mechanism used in current Falcon roller bottle caps, drawing number PD101962.

It is important to roller bottle users that they can attach and detach the cap using a low amount of torque. With the current Falcon cap, some of the torque required to seal and unseal the bottle is generated by the friction created between the sealing mechanism and the bottle rim. The sealing mechanism rubs against the inner rim of the bottle as the cap rotates during assembly and disassembly. With this two piece cap concept, some of this torque is eliminated because the sealing mechanism does not have to rotate as the cap is rotated during assembly or disassembly. It is free to rotate about the axis of the cap, so rather than rubbing against the inner rim of the bottle as the cap rotates, it simply moves up or down as the cap moves up or down.

This two piece design also reduces the amount of torque required to remove the cap from bottles once the seal-area has become crusted with dried media. Roller bottle customers frequently complain that they must apply an especially high amount of torque to remove caps that are stuck to the bottle because the media contained within the bottle dries against the cap and bottle, acting as an adhesive. To remove a one piece cap, the user must rotate the cap and grind this dried media against the sealing surface as the sealing surface rotates against the inner bottle rim. With the two piece design, the sealing surface is lifted free of the crusted media at the bottle rim, rather than grinding against it as the cap rotates.

B. Advantages and Improvements Over the Prior Art

All prior art that I am aware of utilizes a one-piece cap design. Falcon has been selling this one piece cap for more than 10 years. Current screw-on caps used in Falcon roller bottles, Flasks, and centrifugal tubes are all made using a one piece design. The sealing mechanism is not free to rotate within the cap, therefore, it is forced to rub against the inner rim of the container that it is sealing against as the cap is screwed on or off its container.

C. Solutions to Prior Art Problems and How They Are Accomplished

See response to B.

D. Best Embodiment and (if one exists) Commercial Embodiment

Current Falcon one-piece caps for roller bottles are illustrated in BD drawings PD101962 and PD101958.

E. Operative Variations and Alternatives

Seal type may also be identical to the seal type used in Falcon plug-seal cap, BD drawing number PD101958.

F. Underlying Technical Principle(s)

Mechanical advantage of a screw-type threaded cap is translated to an axial force, wedging the sealing mechanism into the inner rim of the container, forming a tight seal due to the interference fit between the sealing mechanism and the container's rim. In the inventive concept, the sealing mechanism does not rotate as the cap rotates, thereby eliminating the friction normally occurring when the sealing mechanism rubs against the container rim as it rotates with the cap. The elimination of this friction translates to a lower torque required to attach and detach the cap from the container.

G. Description of Related Aspects of the Invention (are they also potentially patentable?)

Design can work with any Labware product that utilizes a screw-on, plug-seal type cap where the reduction of torque to seal and unseal is important. Examples include but are not limited to flasks and centrifugal tubes.

H. Unexpected Results

Functional testing of the design has not yet yielded any unexpected results.

I. Description of the Attached Drawings

Attachment 1 - PD101958 – Current Falcon Job Fit Seal Cap

Attachment 2 - PD101962 – Current Falcon Plug Seal Cap

Attachment 3 – Image, Outer Piece, 2 Piece Cap

Attachment 4 - Plug Disc, 2 Piece Cap

Attachment 5 – Top View, Plug Piece, 2 Piece Cap

Attachment 6 – Two Piece Cap Assembly Images

- 8. RELATED ART:** List the citations of any *published materials* which you believe are relevant to evaluating the patentability of the invention. Relevant published materials include published patents and patent applications (domestic and foreign), journal articles, published product information, vendor publications, books, editorials, etc. Also describe any relevant related *research projects at BD* and give citations for any relevant related *BD patent applications or patents* of which you are aware (by Patent and Licensing Dept. file number or U.S. Serial No.). Please *attach copies of the cited publications*. It is not necessary to provide copies of BD patent materials.

A. Published Materials

No materials related to this concept have been released.

B. Related Work at BD

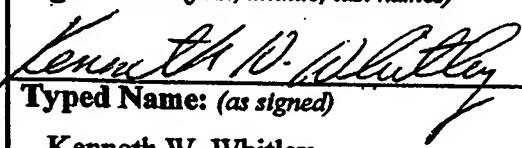
PD101958 - Current Falcon Job Fit Seal Cap

PD101962 - Current Falcon Plug Seal Cap

C. Related BD Patents and Patent Applications

None.

First Presumptive Inventor:**Second Presumptive Inventor:**

Signature: (first, middle, last names) 	Signature: (first, middle, last names)
Typed Name: (as signed) Kenneth W. Whitley	Typed Name: (as signed)
Residence Address: 9515 Meadowmont Ln, Raleigh, NC 27615	Residence Address:
Citizenship: US	Citizenship:

Third Presumptive Inventor:**Fourth Presumptive Inventor:**

Signature: (first, middle, last names)	Signature: (first, middle, last names)
Typed Name: (as signed)	Typed Name: (as signed)
Residence Address:	Residence Address:
Citizenship:	Citizenship:

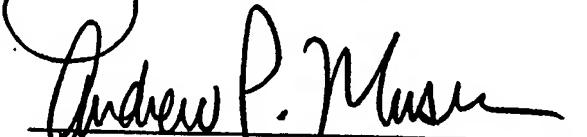
WITNESSES - This document should be witnessed by people who *understand the invention* and the technology to which it relates, but who are *not directly involved* in it.

Explained to and understood by me:



Signature

Date

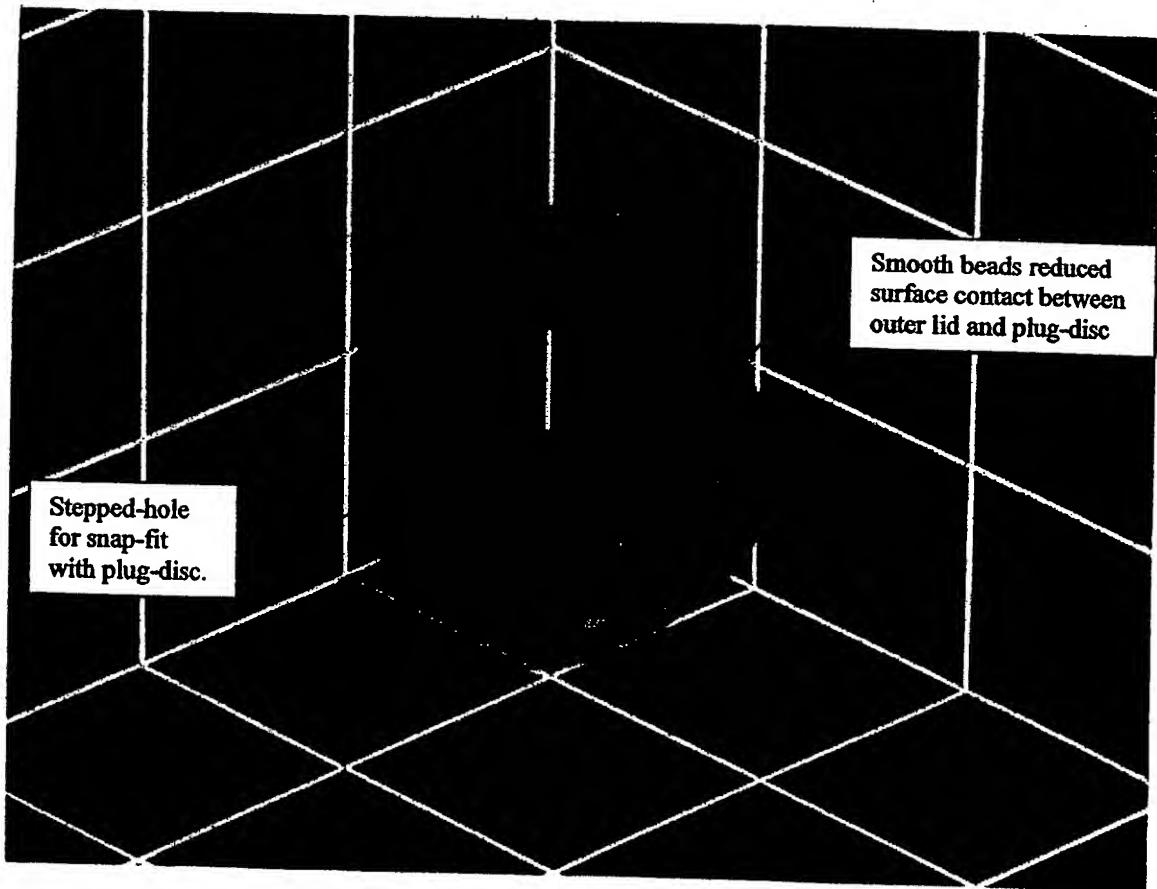


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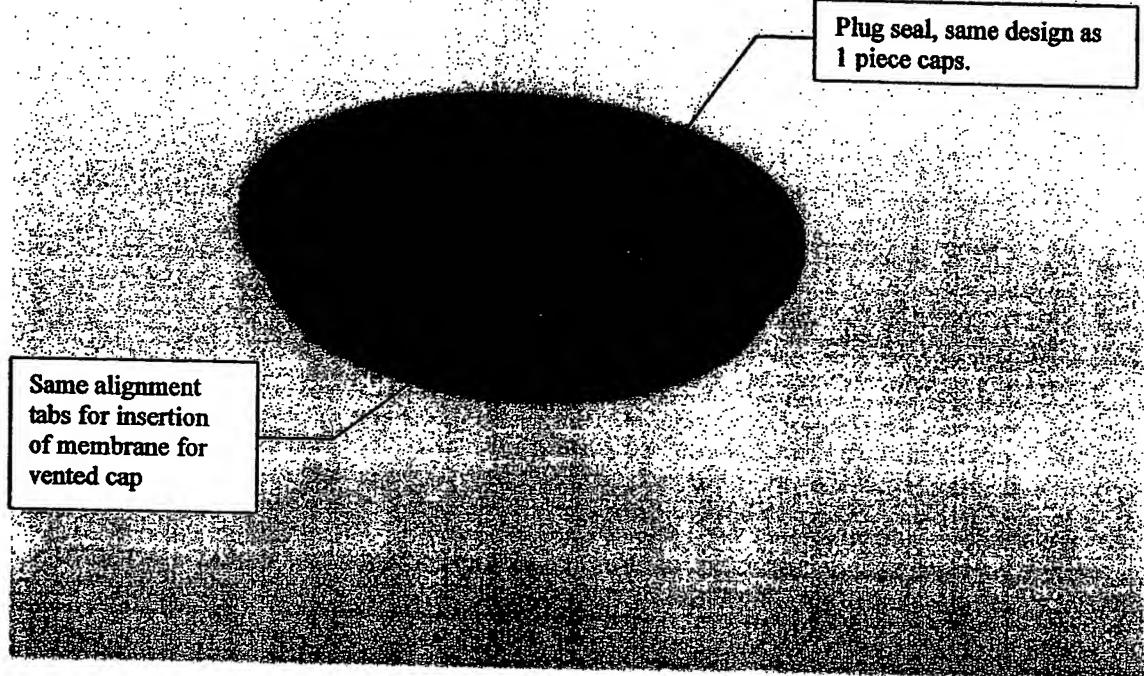
Attachment 3:

Outer Piece, 2 Piece Cap

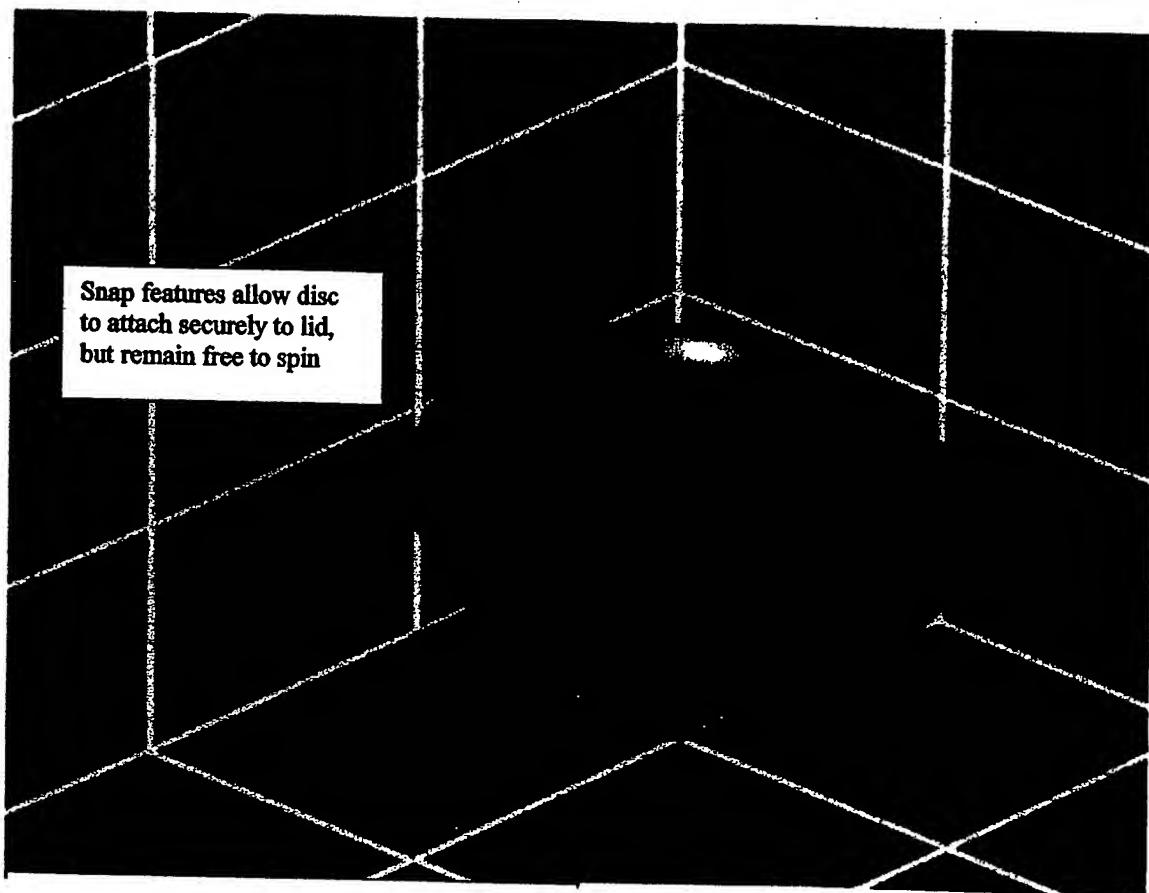


Attachment 4:

Plug Disc, 2 Piece Cap

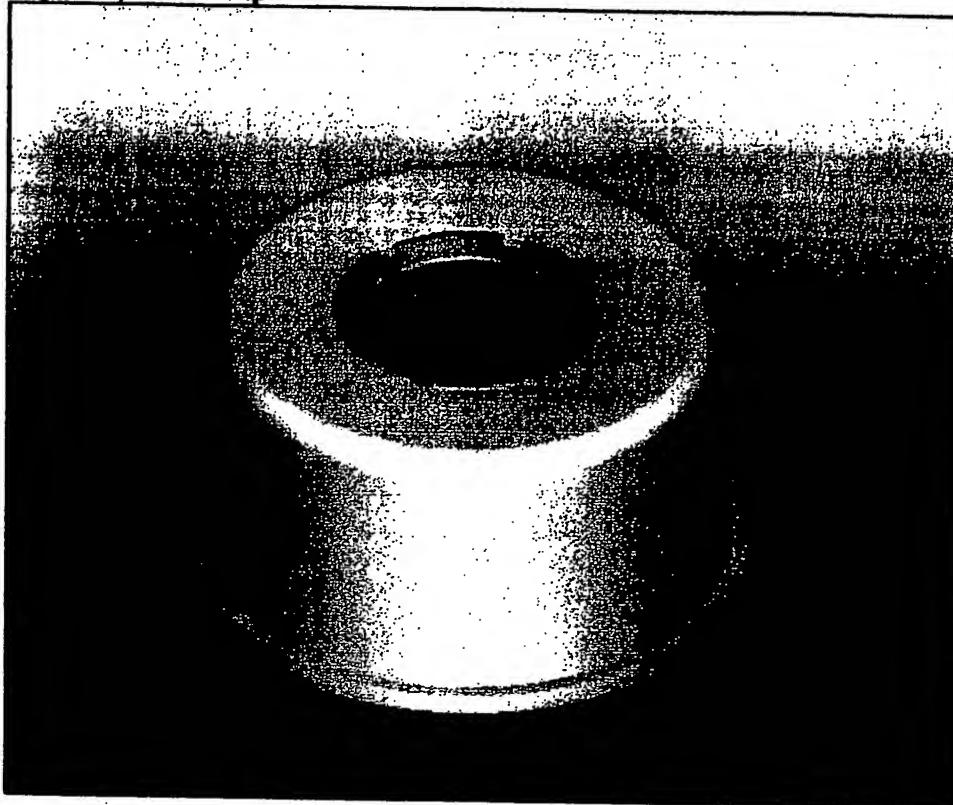


Attachment 5:

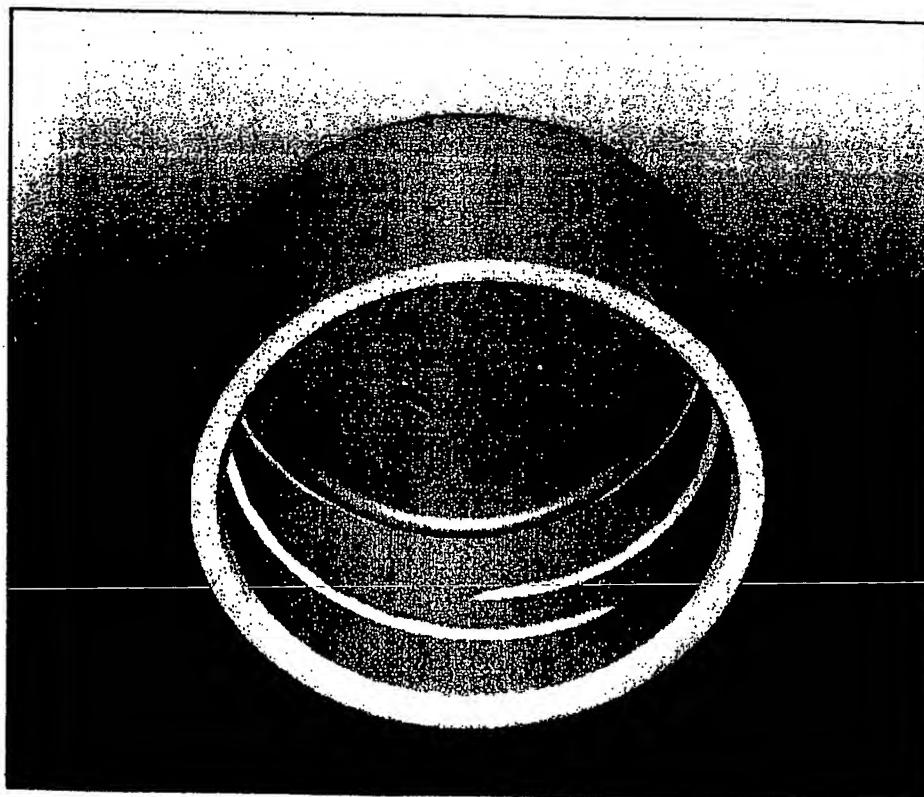


Attachment 6: Two Piece Cap Assembly

Top View, 2 Piece Cap



Bottom View, 2 Piece Cap



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